

REMARKS

In the Office Action, claims 1, 3-11, and 14-15 were rejected. More specifically,

- Claims 1, 3-11, and 14-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishihata et al. (WO 00/343369; “Nishihata”).

By this Amendment, Applicants have amended claims 1, 7-11 and 14-15, and canceled claims 3-6. Applicants do not believe that any new matter is introduced by the claim amendments. Support for the amendments is detailed below. Upon entry of this Amendment, claims 1, 7-11, 14-15 and 19-20 are pending, of which claims 19 and 20 are withdrawn from consideration. For the reasons set forth hereinbelow, Applicants traverse the rejections and respectfully request that the rejections of pending claims be withdrawn.

SUPPORT FOR CLAIM AMENDMENTS

Support for the amendment of the preamble of claim 1 may be found throughout the present specification, particularly in the passage of “The stock shape for machining and a secondarily formed product obtained by machining this stock shape are excellent in mechanical properties, heat resistance, chemical resistance and dimensional stability, each exhibit a stable surface resistivity and also have electrical insulating properties required of resin parts in electric and electronic equipments or the like.” Page 10, lines 18-24 in the present specification.

Support for the added limitation “wherein the thermoplastic resin (A) is a mixture of at least two thermoplastic resins selected from the group consisting of poly(ether ether ketone), poly(ether imide), poly(phenylene sulfide), polysulfone, poly(ether sulfone) and polycarbonate,” after “and 1 to 30 % by mass of a conductive filler (C) which is carbon fiber having a volume resistivity lower than $10^2 \Omega\text{-cm}$,” may be found in claims 5 and 6 currently canceled.

Support for the amendment “the stock shape for machining is a plate having a thickness of 5 to 50 mm or a round bar having a diameter of 5 to 50 mm” may be found in the description of “particularly preferably from 5 mm to 50 mm” may be found throughout the specification, particularly at page 30, lines 26-27.

Support for the amendment “subjected to a heat treatment for at least 3 hours within 15 hours at a temperature of from 180°C to a temperature capable of retaining the solidified state after the extrusion and solidification” may be found throughout the present specification, particularly in the passages of “With respect to the conditions of the heat treatment, it is desirable that when a heat-resistant resin is used, the heat treatment temperature be within a range of preferably 170 to 310°C, more preferably 180 to 300°C, and the heat treatment time be preferably at least 1 hour, more preferably at least 2 hours, particularly preferably at least 3 hours though they vary according to the thermal properties of the thermoplastic resin used, such as melting point and glass transition temperature” may be found throughout the specification, particularly at page 28, lines 14-23 and page 29, lines 2-5 of the present specification.

REJECTION UNDER 35 U.S.C. § 103

The pending claims are currently rejected as obvious over Nishihata. As the Examiner is aware, to establish a *prima facie* case of obviousness of a claimed invention, all of the claim limitations must be taught or suggested in the cited references. MPEP § 2143.01. For the reasons set forth below, Applicants respectfully submit that Nishihata fails to disclose, teach or suggest each and every limitation recited in independent claim 1.

Machining

Independent claim 1 has been amended to distinguish the presently claimed invention

more clearly over Nishihata. In the current amendment of claim 1, “A stock shape for machining” in present claim 1 has been amended to “A secondarily formed product obtained by machining a stock shape for machining.” While the Examiner has argued that “Nishihata further discloses the composition can be formed or molded into various shapes and can be applied to a wide variety of fields including the field of machining (page 29, lines 13-25 and page 31, lines 11-20).” As presently amended, the secondarily formed product of present claim 1 is produced by machining the stock shape for machining. Within the context of the presently claimed invention, “machining” refers to working methods described in the present specification as “Cutting, drilling, shearing and combinations thereof are representative of the machining.” See page 31, lines 8-9.

In contrast, Nishihata does not disclose that a secondarily formed product is produced by machining a stock shape for machining. Instead, Nishihata discloses on page 29, lines 13-25 as follows:

8. Formed or molded product and application field:

The synthetic resin compositions (1) and (2) according to the present invention can be formed into formed or molded products of various shapes, for example, sheets, films, tubes, containers, etc. by conventional melt processing techniques such as injection molding and extrusion. The formed or molded products obtained by forming or molding the synthetic resin compositions according to the present invention can be suitably applied to a wide variety of fields of which control of static electricity, prevention of electrification, electromagnetic interference shielding, prevention of dust collection, etc. are required.

A careful reading of this passage clearly demonstrates that Nishihata does not teach anything about the machining. In particular, the description of “The synthetic resin compositions (1) and (2) according to the present invention can be formed into formed or molded products of various shapes, for example, sheets, films, tubes, containers, etc. by conventional melt processing techniques such as injection molding and extrusion” (emphasis added) clearly

demonstrates that Nishihata contemplates only melt processing techniques rather than machining. In short, the formed or molded products obtained by melt processing techniques such as injection molding and extrusion are the final products.

In addition, Nishihata discloses on page 31, lines 11-20 as follows:

In a field of OA machines, may be mentioned charging members such as charging rolls, charging belts, static charge eliminating belts, transfer rolls, transfer belts and developing rolls in image forming apparatus such as electrophotographic copying machines and electrostatic recording apparatus; and transfer drums, bushings, paper and paper money carrying parts, paper feed rails, font cartridges, ink ribbon canisters, guide pins, trays, rollers, gears, sprockets, printer housings and connectors for recording apparatus.

This disclosure also teaches nothing about machining.

Additionally, the limitation “the stock shape for machining is a plate having a thickness of 5 to 50 mm or a round bar having a diameter of 5 to 50 mm” found in presently amended claim 1 further distinguishes the presently claimed invention over Nishihata. The present specification states that “According to the stock shape for machining of the present invention, a part excellent in dimensional stability can be easily produced by machining such as cutting and drilling, and a part having a thickness of 5 mm or greater, that is hard to be applied by injection molding, may also be formed.” (page 10, lines 7-12).

As argued above, Nishihata does not teach anything about the fact that “According to the results of an investigation by the present inventors, it has been found that an extruded product, which is suitable for machining such as cutting, drilling and shearing, thick-wall and low in residual stress, is obtained by extruding and solidifying the above-described resin composition” as disclosed in the present specification at page 27, lines 10-15.

Accordingly, Nishihata does not teach the fact that “a secondarily formed product is obtained by machining the stock shape for machining that is “a plate having a thickness of 5 to

50 mm or a round bar having a diameter of 5 to 50 mm” as recited in present claim 1. The presently pending claims thus include a limitation not found or fairly suggested in Nishihata.

A mixture of at least two thermoplastic resins

In the current amendment, the phrase of “wherein the thermoplastic resin (A) is a mixture of at least two thermoplastic resins selected from the group consisting of poly(ether ether ketone), poly(ether imide), poly(phenylene sulfide), polysulfone, poly(ether sulfone) and polycarbonate” has been inserted into present claim 1.

The present specification discloses that “In particular, at least two thermoplastic resins are used in combination, whereby the production of burr upon drilling can be markedly inhibited.” (page 10, lines 14-17) and that “At least two of these thermoplastic resins are preferably used in combination from the viewpoint of inhibiting the production of burr upon drilling. The single use of a resin having high toughness tends to produce burr upon drilling. However, the combined use of two or more thermoplastic resins can markedly inhibit the production of burr. In particular, a resin having high toughness and a resin having relatively low toughness are used in combination, whereby the production of burr can be prevented while retaining high toughness.” (page 15, lines 13-22).

The reason why the production of burr upon drilling is inhibited by using two or more thermoplastic resins in combination compared with the single use of a thermoplastic resin is presumed to be as follows. With respect to burr produced upon drilling in case of single use a thermoplastic resin having high toughness and strength, the resin is neither cut out of a wall surface around a bore nor ground finely even when a drill is rotated because the resin has the above properties. In short, the most of the resin remains on the wall surface of the bore made by drilling, and so the burr also becomes long.

However, when resins are used in combination, the properties of the mixture (e.g., strength, elongation and modulus of elasticity) vary according to factors such as dispersion of the resins by mixing, a state of an interface between the resins and the degree of kneading in addition to factors such as properties of the resins used and mixing proportions thereof. Accordingly, the range of variation of properties may be controlled by a combination of resins.

For example, when the strength is lowered by this control, burr produced around a bore upon drilling is rapidly cut out of the wall surface of the bore by the rotating force of the drill and further ground into fine pieces. The fine pieces are swept away from the stock shape for machining by the rotating force of the drill. As a result, it is presumed that only slight burrs are observed, and thus the burrs are short.

As described above, the present invention produces the claimed effect capable of inhibiting the production of burr by using the resins in combination, i.e., controlling the range of variation of properties caused by the combination.

In contrast, Nishihata only generally describes that “These synthetic resins may be used either singly or in any combination thereof.” (page 15, lines 13-14). Examples and Comparative Examples of Nishihata only use Poly(phenylene sulfide), Polybutylene terephthalate, Polyoxymethylene, Polycarbonate, Polypropylene and Polyethylene singly. Accordingly, Nishihata does not disclose the fact that “the thermoplastic resin (A) is a mixture of at least two thermoplastic resins selected from the group consisting of poly(ether ether ketone), poly(ether imide), poly(phenylene sulfide), polysulfone, poly(ether sulfone) and polycarbonate” as recited in present claim 1 for inhibiting the production of burr.

This difference provides an additional example of a limitation in presently pending claim 1 that is not taught or fairly suggested by Nishihata. The presently pending claims thus include a limitation not found or fairly suggested in Nishihata.

Residual Stress

Presently amended claim 1 includes the limitation “subjected to a heat treatment for at least 3 hours within 15 hours at a temperature of from 180°C to a temperature capable of retaining the solidified state after the extrusion and solidification.” With respect to product-by-process, the Examiner indicates that “For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps.”

However, the degree of residual stress is an important property for determining high dimensional accuracy of the secondarily formed product as described in the present specification as follows “An extruded product too great in residual stress upon extrusion tends to deform upon or after machining, and so it is difficult to obtain a secondarily formed product having high dimensional accuracy.” Page 7, lines 9-12.

The above limitation of “subjected to a heat treatment for at least 3 hours within 15 hours at a temperature of from 180°C to a temperature capable of retaining the solidified state after the extrusion and solidification” is a process for expressing the degree of residual stress. Applicants respectfully submit that the technical significance of this limitation should be carefully considered by the Examiner. Nishihata does not teach anything about the residual stress.

In view of the foregoing, Applicants submit that Nishihata fails to disclose, teach or suggest each and every limitation recited in claim 1. Thus, Applicants submit that a *prima facie* case of obviousness has not been established (MPEP § 2143.01) and that claim 1 is nonobvious in view of Nishihata.

Applicants further submit that claims 7-11 and 14-15, which depend from claim 1, are

also nonobvious in view of Nishihata. *See* MPEP §2143.03 (stating that if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious).

Accordingly, Applicants respectfully request that the §103 rejections associated with claims 1, 7-11 and 14-15 be withdrawn.

CONCLUSION

Applicants respectfully request a Notice of Allowance for the pending claims under consideration in this application. If the Examiner believes that personal communication will expedite the prosecution of this application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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